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FMD VIRUS TYPE A22 IN CATTLE EPIDEMIOLOGY OF FOOT-AND-MOUTH DISEASE (IN THE UKRAINE) IN RELATION TO IMMUNIZATION.  
(Epizootichnii protses ta imunizatsiya silskogospodarskikh tvarin pri yashchuri).

VETERINARIIA (KIEV), in Russian, Vol. 47, 1978, pp. 36-38.

(Article by Poluliakh, V.I.).

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The intensity of foot-and-mouth disease epizootics and their spread have considerably decreased since the introduction of specific active immunization (H. Rerer, 1957; 1958; F. C. Salces, 1967; H. W. Golthals, 1968; J. Borsella, 1970; A. A. Boyko, 1970, et al.).

Owing to immunization, the course of the foot-and-mouth disease epizootics has changed and their liquidation has become easy.

The analysis of the statistical material available on the foot-and-mouth disease epizootics that broke out in Ukraine during 1965 - 1966 and were caused by the virus of type A<sub>22</sub>, allowed us to evaluate objectively how the vaccination of cattle influenced the course of the epizootic process as a whole as well as efficacy of the means used in liquidating an epizootic that began in October-December, 1965.

According to the course assumed by the epizootic in each of the regions of the republic and according to the general foot-and-mouth disease vaccinations carried out in cattle we have divided all the regions into three zones and analyzed them separately.

The first zone included 10 districts in which the foot-and-mouth disease epizootics broke out in October-November, 1965. In the initial period of the outbreak the cattle were almost not being vaccinated (because of vaccine shortage) and the fight against the disease was limited to the use of veterinary-cum-sanitary as well



as organizational-cum-administrative and quarantine measures.

The second zone contained six districts where foot-and-mouth disease first occurred in December 1965 - January, 1966. In all these districts, the cattle underwent vaccination in combination with quarantine measures at the very beginning of the outbreak.

In the third zone there were seven districts situated (with the exception of the Odesa district) in the western part of the republic. In these districts the epizootics broke out mainly in February - March, 1966. The cattle received prophylactic foot-and-mouth disease vaccination even before the main outbreak of the disease.

The regions of Ivano-Frankovska and Zakarpatia were free of foot-and-mouth disease in the period of 1965 - 1966. The efficacy of vaccination was estimated according to the opinion of many epizootiologists, who stated that an epizootic was over if 85% of the susceptible animals were immune.

In the first zone (Figure 1) where the foot-and-mouth disease type A<sub>22</sub> had good chances of spreading before vaccinations began, the efficacy of vaccination was low because of the delay in vaccinations. 69.3% of all the affected foci fell in this region with 74.6% of cattle having been affected in the entire republic.

A sharp fall in the epizootics in this zone was marked 1.5 months earlier than shown by theoretical calculations and they were over in 7 months after beginning with over 60% animals having become immune as a result of pulling over or vaccination.

In the second zone (Figure 2) owing to large-scale and very early use of prophylactic vaccination, 79.1% of cattle escaped being affected by foot-and-mouth disease. In this group an animal that did not fall sick had received 1.9 shots of anti-foot-and-mouth disease vaccine.

22.8% of all the affected foci fall in this group with 20.9% of cattle that suffered from foot-and-mouth disease in the course of the epizootics. The factual period of the epizootics coming to an end was a month later than the calculated data, 100% of the animals being immune.



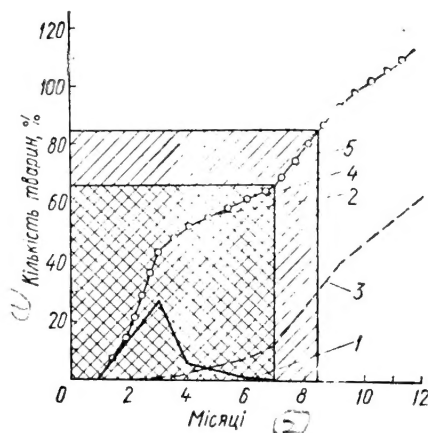


Figure 1: Vaccination of animals and the course of the foot-and-mouth disease epizootics in the first zone.

1. number of affected animals;
2. number of animals becoming immune as a result of their pulling over, vaccination and revaccination;
3. number of vaccinated and revaccinated animals;
4. the actual period of the epizootics being stopped;
5. theoretical calculations of the periods at which the epizootics came to an end.

Key: 1.Number of animals, %; 2.Months.

In the third zone (Figure 3) the animals were being already immunized with the foot-and-mouth disease vaccine before the outbreak and hence 94.2% of the cattle were not susceptible to foot-and-mouth disease. These districts contained only 7.9% of all the affected foci in Ukraine with 4.5% of animals being sick. The epizootics stopped five months after they began. The theoretical calculations and the periods at which the epizootics actually stopped coincided.

Thus, in the liquidation of the foot-and-mouth disease epizootics in Ukraine caused by the virus of type A<sub>22</sub> along with the strictly implemented organizational-cum-administrative and veterinary-cum-sanitary measures very important was the use of prophylactic vaccination, which in the beginning put a stop to the spread of epizootics and then made its liquidation easy.





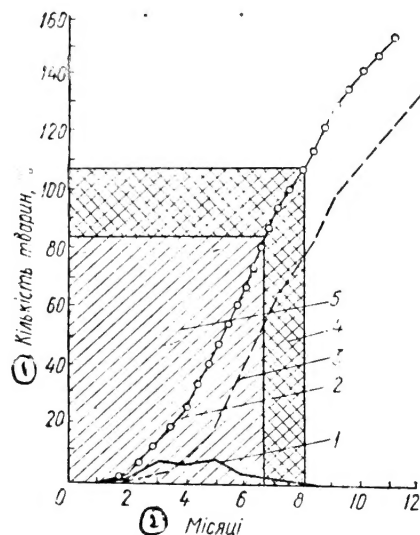


Figure 2: Vaccination of animals and the course of epizootics in the second zone (legends are the same as for Figure 1).

Key: 1. Number of animals, %; 2. Months.

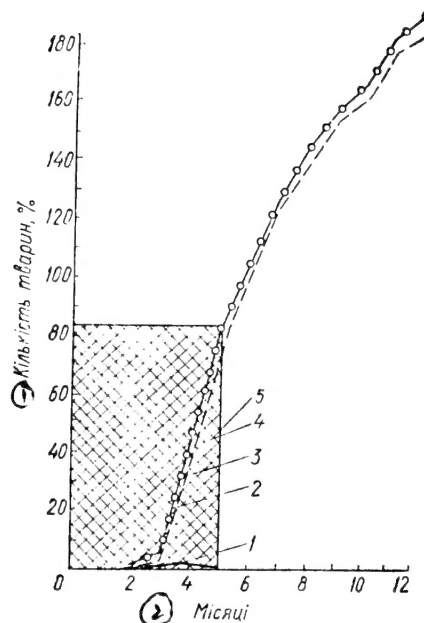


Figure 3: Vaccination of animals and the course of epizootics in the third zone (legends are the same as for Figure 1).

Key: 1. Number of animals, %; 2. Months.



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